Letters to the Editor

Cholesterol Determination on the SMA12/60

A Technicon SMA12/60 has been in routine use in this department for the past six months. Our evaluation of the equipment has been reported at the Technicon Symposium held in London in November 1969, and will be published together with the other papers presented there.

Since that date we have experienced some difficulties with the cholesterol channel which resulted in our having to discard many results. These difficulties were (*a*) blockage at the metal nipple through which the sample is injected from the Tygon phasing coil into the stream of Liebermann-Burchard reagent; (*b*) attack on the final six inches of the phasing coil by the reagent; and (*c*) carryover between specimens caused by the length of the phasing coil itself.

Blockage at the nipple, which was the most troublesome difficulty, was obviated by increasing the dilution of the sample. The tube carrying Liebermann-Burchard reagent was altered from 0·073 (green) to 0·081 (purple); to compensate for this the cholesterol flow-cell pump-back tube was altered from 0·065 (blue) to 0·073 (green).

Attack on the phasing coil was eliminated by removing the 0·20 Tygon phasing coil from its position immediately before the cholesterol cartridge to a position between the PT-13 cactus and the pump, and by inserting a short length of polythene tubing (0·015 ID × 0·043 OD) between the end of the sample tube and the sample injection nipple.

Carryover between specimens was thought to be aggravated by lack of sufficient air between diluted samples in the phasing coil. This was overcome by (*a*) decreasing the volume of air taken off at the A-4 debubbler by changing the air take-off tube from 0·030 (black) to 0·025 (orange/white), and (*b*) switching the positions at which calcium and cholesterol samples were taken off at the PT-13 cactus so that the cholesterol sample was taken off vertically.

At the end of each day, an 8% solution of bleach (Domestos) is aspirated for 15 minutes via the sample probe while other lines are pumping water; the sample probe is then placed in water and rinsing continued for a further period of 15 minutes.

During the five weeks since these changes were made the cholesterol channel has remained trouble-free. A control serum with a mean cholesterol concentration of 76·1 mg/100 ml shows a standard deviation of 3·3 mg/100 ml (N = 301).

A. MITCHELL
Biochemistry Laboratory, Royal Victoria Hospital, Belfast, Northern Ireland

Urinary Mercury

Interest in the determination of urinary mercury is increasing, judged by the number of papers recently appearing on this subject and by the number of requests for this investigation received by this laboratory.

There is a real need for a simple and rapid method for the determination of mercury in biological samples for the general laboratory. Most of the earlier procedures require the preliminary oxidation of organic matter under conditions which prevent loss of mercury. This is time consuming and tedious. Four such methods were reviewed by Goldberg and Clarke (1970) in your March issue (**23**, pp. nos. 178-184). Lindsted (1970) has recently developed a rapid method using atomic absorption spectrophotometry but previous digestion is still needed.

It might be helpful, therefore, to draw attention to the simple method described by Magos and Cernik (1969) where no digestion is required and the whole procedure takes only a matter of minutes. In brief the technique is to convert mercury into a volatile form which is then estimated by an ultraviolet photometer. An estimation only takes a couple of minutes and no special skill. Although designed primarily for inorganic mercury the method has recently been adapted successfully for organic compounds by Gage and Warren (1970). We have used no other method in this laboratory for over two years in the supervision of workers exposed to mercury with complete satisfaction and a great saving of time and effort.

M. H. P. SAYERS
Medical Laboratory, HM Factory Inspectorate, Baynards House, 1-13 Chepstow Place, Westbourne Grove, London W2

References

Goldberg, D. M., and Clarke, A. D. (1970). Measurement of mercury in human urine. *J. clin. Path.*, **23**, 178-184.

Lindstedt, G. (1970). A rapid method for the determination of mercury in urine. *Analyst*, **95**, 264-271.

Magos, L., and Cernik, A. A. (1969). A rapid method for estimating mercury in undigested biological samples. *Brit. J. industr. Med.*, **26**, 144-149.

Gage, J. C., and Warren, Judith M. (1970). The determination of mercury and organic mercurials in biological samples. *Ann. occup. Hyg.*, **13**, 115-123.

Blood Levels in Acute Barbiturate Poisoning

Gillett and Warburton (*J. clin. Path.*, **23**, 435, 1970) conducted a survey of blood levels in allegedly proven cases of acute barbiturate poisoning. To quote their own words 'the coroner's question "was death due to barbiturate poisoning?" must be answered by reference to the blood levels known to cause unconsciousness'. I disagree. As the authors have done me the honour to quote figures from my book, albeit incorrectly dated, may I refer them to the second edition, pp. 65-67, 121-2, and 126-128.

The difficulties of using only blood are emphasized in one case of mine in which the blood quinalbarbitone level was 0·8 mg/100 ml and there was clear circumstantial evidence that the deceased had been alive and well 10 minutes before he was found dead. In this case there was 30 mg/100 g in the liver and 2 g in the stomach contents!

In my opinion the coroner's question will be much more correctly answered if consideration is given to the results of analyses of blood, liver, and stomach contents.

A. S. CURRY
Director, Central Research Establishment, Aldermaston, Reading

Book reviews

Functional Pathology of the Human Adrenal Gland By T. Symington. (Pp. xvi + 551; illustrated. £10). Edinburgh and London: E. and S. Livingstone. 1969.

In the first part of this monograph Symington himself deals with the adrenal cortex. There are detailed sections on embryology, the foetal gland, blood supply (including interesting original work), and innervation: but it is in